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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/589,467

08/14/2006

Celine Fiorini-Debuisschert

4590-563

7175

33308

7590

01/23/2009

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EXAMINER

MUI, CHRISTINE T

ART UNIT

PAPER NUMBER

1797

MAIL DATE

DELIVERY MODE

01/23/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/589,467	<b>Applicant(s)</b> FIORINI-DEBUISSCHERT ET AL.	
	<b>Examiner</b> CHRISTINE T. MUI	<b>Art Unit</b> 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 14 August 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,5,6,8,10 and 11 is/are rejected.
- 7) ☒ Claim(s) 3,4,7,9 and 12-14 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>See Continuation Sheet</u> .                                  | 6) <input type="checkbox"/> Other: _____                          |

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :14 August 2006; 08 September 2006.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. Regarding claim 8, the phrase "can be" is interpreted by the examiner to be indefinite because it is unclear whether the limitation of the inert gas, nitrogen is actually used for is selected from a the group of inert gases selected from nitrogen and other inert gases.

4. Claim 8 recites the limitation "the pump" in line 3 of the instant claim. There is insufficient antecedent basis for this limitation in the claim.

5. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. It is unclear the examiner at the end of line 3 of the instant claim as to why applicant has added a ';'. It appears to examiner that is semi-colon ends a sentence fragment. Clarification is needed.

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

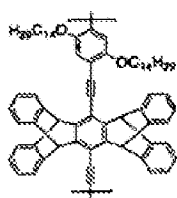
3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).


4. Claims 1-2, 5-6 and 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arnold et al (submitted on the Information Disclosure Statement on

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14 August 2006; herein referred 'Arnold'), and further in view of Yang et al (submitted on the Information Disclosure Statement on 14 August 2006; herein referred 'Yang').

5. Regarding claims 1-2, 5-6 and 10-11, the reference Arnold discloses a chemical sensor for a specific chemical recognition element that allows an element to be identified based on the fabrication of molecularly imprinted polymers (MIPs). A MIP is a plastic cast or mold of the molecule of interest where recognition is based on shape in a cavity and are made by adding the molecule of interest to a solution of binding molecule that can be chemically incorporated into a polymer. The binders usually have an affinity for the target and form a complex. Interactions, considered to be charge transfer, hold the complexes together include  $\pi$ - $\pi$  interactions, hydrogen bonding, metal-ligand binding and even covalent bond formation. Cross linkers may be used to bind with the polymer chain to form a rigid, three-dimensional structure, that ensures the rigidity necessary to hold the binder in place and maintain the correct cavity shaped even after the target is removed (see abstract, pages 190-191). Arnold does not disclose the sensor to comprise a material to be fluorescent. Yang discloses a fluorescence quenching of pentiptycene-derived phenyleneethynylene polymer with the molecular



structure of . This polymer forms spectroscopically stable (reproducible) and highly fluorescent thin films. The fluorescence of the structure above in spin-cast films respond to vapors of TNT and DNT form non-bonding electrostatic interaction

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between electron rich polymer and the electron deficient TNT molecules. As seen from the molecular structure above the porosity of the molecule can be seen as a result of the rigid pentiptycene groups that provide cavities for binding. In order to study the fluorescence quenching sites of the polymer film to a vapor of an analyte of interest, the polymer film is inserted into a sealed vial at room temperature and the fluorescence spectra were recorded after exposure to analytes for a specified amount of time. The quenching of the molecule above was with excitation wavelength 400 nm, which means there is a light source for illuminating the molecule (see abstract, page 11864-11865, 11868). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the chemical sensor of Arnold made with a fluorescent material with the one disclosed by Yang, so that the sensor only specifically fluoresces reacts to only a specified chemical based on its shape and its ability to fit in a specified cavity.

***Allowable Subject Matter***

6. Claims 3-4, 7, 9 and 12-14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. A chemical sensor with a cavity that is comprised of a fluorescent material as those cited in claims 3-4 is not found, taught, suggested nor found obvious in the prior art. The WO reference as cited in the IDS on 14 August 2006, discloses a molecular imprinted polymer membrane that is selective for a binding site for a molecule with the second and third structure on page 3 of the claims submitted on 14 August 2006, but is

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the closest prior art for claim 4, but is not found obvious to modify the molecular imprinted cavities as those cited in the claims.

8. Furthermore, the sensor does not comprise a pump, an inert nitrogen gas source, and removal shutter connected to the sensor itself and also does not disclose using the embodiments in a method of chemical detection. The closest prior art just discloses a chemical sensor in the form of film silent of other physical embodiments claimed in the instant application.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISTINE T. MUI whose telephone number is (571)270-3243. The examiner can normally be reached on Monday-Thursday 7-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter Griffin can be reached on (571) 272-1447. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

CTM

/Walter D. Griffin/  
Supervisory Patent Examiner, Art Unit 1797